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ABSTRACT

An action research project investigated the effect of reciprocal teaching instruction and use on the comprehension of seventh-grade general English students. Reciprocal teaching is a form of dialogue structured around four skills--question generation, summarization, clarification, and prediction. These techniques are used in small group discussions to help students become more effective readers. The 20 students in the experimental group improved their comprehension scores on the Gates MacGinitie Reading Test after reciprocal teaching intervention. The 20 students in the control group received no reciprocal teaching instruction, but did complete the same tests and activities that the experimental group completed. The results of this action research project indicate that reciprocal teaching improves comprehension. (Three tables of data and a figure presenting experimental and control group examples of summarization are included; 22 references, 20 daily passages and activity sheets, the holistic scoring guide, and a sample reciprocal teaching dialogue are attached.) (Author/RS)

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The Effects of Reciprocal Teaching on Comprehension

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Running head: THE EFFECTS OF RECIPROCAL TEACHING

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Abstract

This action research project investigated the effect of reciprocal teaching instruction and use on the comprehension of seventh grade general English students. Reciprocal teaching is a form of dialogue structured around four skills--question generation, summarization, clarification, and prediction. These techniques are used in small group discussions to help students become more effective readers. The twenty students in the experimental group improved their comprehension scores on the Gates--MacGinitie Reading Test after reciprocal teaching intervention. The twenty students in the control group received no reciprocal teaching instruction, but did complete the same tests and activities that the experimental group completed. The results of this action research project indicate that reciprocal teaching improves comprehension.

The Effects of Reciprocal Teaching on Academic Achievement

The purpose of this action research is to examine the effects of reciprocal teaching on reading comprehension of seventh grade English students. Reciprocal teaching is an instructional technique designed to enhance student comprehension of text. The procedure consists of a structured dialogue between teacher and students, with each taking a turn as teacher. The dialogue is structured by the use of four strategies: questioning, summarizing, clarifying and predicting. The teacher must thoroughly explain and model all four elements so there is no confusion; they are the foundation of reciprocal teaching (Herrman,1988). Davey and McBride (1986) investigated the effects of question-generation training on comprehension and obtained positive results. Students were given an opportunity to form their own questions and become actively involved in the text. Summarization skills allow students to identify main ideas, organize concepts and draw conclusions. Clarification is of particular importance because students need to learn to reread when they stop comprehending the text. Predictions enable students to hypothesize what will happen next and give them a purpose for reading. A fifth component of reciprocal teaching is the dialogue. The discussions must be structured and the teacher must provide specific feedback. Learning takes place when students understand the four skills and how to interact

appropriately with one another. These four strategies enable students to monitor their own comprehension (Haller, Child & Wahlberg, 1988). In designing this research project I wanted to investigate the effect of the reciprocal teaching method and its four strategies on my students' comprehension. And, more specifically, I wished to investigate my students' acquisition and use of questioning and summarizing skills.

Stanley and Greenwood (1983) stated "Design and effective use of instructional procedures which elicit student's active response should be immediate concerns for today's teachers" (p. 370). Effective learners need to be engaged in the learning process; teachers should explain and model correct use of reading/learning strategies. Currently, there is a gap between what teachers know about reading research and what they do in their classrooms (Dermody, 1988). Research concerning reciprocal teaching indicates that it not only improves academic achievement (Allen & Feldman, 1973; Benware & Deci, 1984; Miller, Miller & Rosen, 1988; Pigott, Fantuzzo & Clement, 1986), but also attitude (Allen & Feldman,1973; Fantuzzo, Riggio, Connelly & Dimeff, 1989).

Allen and Feldman (1973) found that the tutor of groups got better at teaching/learning with practice. Tutors indicated that they were more motivated, felt responsible, and had better attitudes toward school. Students who were given the opportunity to teach each other students understood broad concepts, were

intrinsically motivated, and liked the material more than students who studied to be tested (Benware & Deci, 1984). A more recent study showed that students felt more at ease, less stressed, after reciprocal teaching instruction and their satisfaction with the course improved (Fantuzzo et al., 1989). These studies indicate that learning with the purpose of teaching others is effective on both the affective and cognitive levels for both the student "teacher" and learners.

Reciprocal teaching helps students learn how to learn from the text. This metacognitive activity enables them to become self-monitoring readers (Smith & Dauer, 1984). Students must be taught to plan, implement, and evaluate while reading; they must become responsible for their learning (Palincsar, 1986). When teachers provide students with explicit strategy instruction and allow them to practice, the students are responsible for their own learning. These students are empowered. Pearson and Dole (1987) examined the difference between the traditional basal reading program and recent research concerning explicit comprehension instruction. They, too, found reciprocal teaching significantly improves comprehension. Reciprocal teaching has been used on adequate decoding, poor comprehending fourth and seventh graders (Lysynchuk, Pressley & Vye, 1990) and at-risk readers (Helfeldt & Henk, 1990). Reciprocal teaching improved comprehension test scores (Miller et al., 1988). Results of these experiments indicate that there is an increase in

comprehension skills of the students tested.

Annmarie Palincsar and Ann Brown are noted for their work in reciprocal teaching. They best explain it, "In reciprocal teaching, the adult and students take turns assuming the role of teacher. The 'teacher' is responsible for leading a dialogue about a passage which the students are reading silently or with the assistance of an adult." (Palincsar & Brown, 1985, p. 772) The participants use four strategies: questioning, summarizing, clarifying, and predicting. The students begin passively at first, but gradually assume leadership of the structured discussions as the teacher monitors. For this reason, it is described as proleptic (Palincsar, 1984). Haller, Child & Wahlberg (1988) found that metacognitive instruction has a substantial effect on comprehension. They cited self-questioning as particularly effective. An understanding of the skill of questioning is necessary because effective readers use self-questioning to identify important points, find main ideas, catagorize details, and identify organization patterns (Cohen, 1985). As with learning the skill of self-questioning, effective readers have acquired the ability to summarize. Taylor (1984) believes that knowledge of narrative and expository structure, concentration, and notetaking enable the reader to distinguish what the key elements of a passage are. He further states that teachers must stress that one reading is not enough. Teachers should give students ample opportunity to practice constructing

concise summaries. As students question and summarize what they read, they must realize when understanding ceases. Clarification is knowing when understanding has stopped and doing something about it. Predication is the fourth element of reciprocal teaching. It involves asking what will happen next.

After the students understand the elements and process, they begin to engage in the actual learning activity. A basic outline of a typical reciprocal teaching dialogue follows. They are divided into groups and given reading material. Each group has one student who is designated teacher. The students read the passage and use the four activities in dialogue. For example, after reading part of the passage, the teacher may say, "My question is . . . " Another student answers that question then asks another. A third student answers the second question and asks another, etc. Then the teacher summarizes the passage and asks group members to add or delete information. Others volunteer their ideas, then the group decides on the best summary. The teacher asks if anyone needs anything clarified; most often unfamiliar vocabulary words are defined. Other clarifications may be pronoun--antecedent agreement or confusing pronouns (it, they). Finally based on what was read, the teacher gives a prediction and asks for other ideas. Each student has many opportunities to respond and comprehend the material.

The purpose of this research project was to improve the comprehension of my students using the reciprocal teaching

strategy. I expect that students who are exposed to reciprocal teaching will raise their comprehension scores.

Method

Subjects

Forty junior high students (16 male, 24 female) in a rural Midwestern community were chosen to participate in this study. The forty students were chosen from three classes of general English seven. Ten students were chosen from each of the two experimental groups (class sizes 22 and 29) and twenty were chosen from the control group (class size 31) based on Gates--MacGinitie Reading Test scores. All students were Caucasian.

Materials

Before beginning the reciprocal teaching instruction, all students were given form K of the Gates--MacGinitie Reading Test (1989). For the next twenty days, all students were given a two hundred-fifty word passage and an activity to complete (See Appendix A). The daily activity was one of the following: Answer five comprehension questions (represent Bloom's lower and higher levels); Write one low level question and one high; Write a summary. The activities were graded using a six point holistic scoring method designed by me (See Appendix B). During the explanation of questioning skills, I used many pages from In Pursuit of Blooms. It explains Bloom's taxonomy in an age appropriate way that has many opportunities for practice. Each

student in the experimental group received page seven of Palincsar and Brown's 1988 article "Reciprocal Teaching" as an example of reciprocal teaching (See Appendix C). At the conclusion of the study, all students took form L of the Gates--MacGinitie Reading Test.

Design and Procedure

The experimental group consisted of two of my general English seven classes. This group was taught reciprocal teaching through direct instruction, modeling, and practice. The control group was another teacher's general English seven class. It received no reciprocal teaching instruction. Both groups took form K of the Gates--MacGinitie Reading Test. I paired ten students each from my second hour class and my seventh hour class with twenty students from the other teacher's first hour class based on the students' Gates-MacGinitie Reading Test scores. By "paired", I mean I matched similar test scores between students in the control group and the experimental group. Beginning on the following Monday, and continuing for a total of twenty days, all students involved in the study read two hundred-fifty word passages and completed the related activity. The control group members completed the passages and activities individually, usually with no help from the teacher.

The experimental group students were taught the four strategies (question, summarize, clarify, and predict) through explicit metacognitive instruction. The skill of questioning was

taught using Blomberg's In Pursuit of Blooms. Basically, I taught them high and low level questions and their uses. I asked them to question themselves as a teacher would. Two of the three after-reading activities dealt with questioning. One of the activities was to answer five questions that represented high and low level thinking skills. Another activity was writing two questions (one high level, one low level) about the passage. After defining and modeling summarization, I used McTighe and Lyman's Think--Pair--Share strategy (cited in Coley & Depinto, 1989). Each student thinks of a summary and quietly tells his/her neighbor. I called on a few students and aided the class in critiquing the responses. Students were encouraged to give a concise summary without omitting important details. I used common children's stories and current movies and television shows to help students practice the skill of summarizing. In the third daily activity students wrote a brief summary of the passage.

Clarification is easy to define, but difficult to get the students to do. I explained that as they read material sometimes the information stops making sense. First they need to recognize when that happens, and next, they need to do something about it. They must either read on, hoping it becomes more clear, reread it one or more times, consult a dictionary or glossary, or ask a parent, classmate, or teacher. I stressed that understanding what is written is their responsibility.

Prediction is self-explanatory. I simply told them that

text structure and the author often give clues about what will be discussed or what will happen in the story next. In order to have a purpose for reading, I suggested that they guess what was coming. I also told them that there are no wrong answers.

The four strategies are the foundation of the reciprocal teaching dialogue. After explaining them and the dialogue, I led the first four days of instruction. I gradually allowed students to take control of the whole class group helping them critique one another's responses. On day five I put them in teacher-made groups and walked around class observing and remediating. Gradually my intervention decreased and students retained complete responsibility for their knowledge acquisition. After twenty days of passages and activities, both groups took form L of the Gates--MacGinitie Reading Test.

Results

First I wanted to measure the effect of reciprocal teaching instruction and use on student comprehension. Students in the experimental and control groups completed form K of the Gates--MacGinitie Reading Test (GMRT), read twenty pages and did the related activities, and completed parallel form L of the GMRT. GMRT results are given in grade equivalents. A grade equivalent is a numerical representation of a student's achievement; a student with a grade equivalent (GE) of 7.8 has an achievement level estimated to be equivalent to that of an average student in the eighth month (May) of the seventh grade. Students in the

experimental group received a mean score of 7.55 on form K of the GMRT. After reciprocal teaching instruction intervention the experimental group received a mean score of 8.29 on parallel form L. The experimental group improved its mean score by .74 GE points. The control group received a mean score of 7.57 on form K of the GMRT. The control group's mean score on from L was 7.02. That score represents a decrease of .55 GE points.

Insert Table 1 about here

Another measurement of comprehension was the twenty activities. After holistically scoring all twenty activities for the forty students involved, I compared activities one, two, and three (answer five questions, write two questions, write a summary) with the eighteenth, nineteenth, and twentieth (again, one of each activity). I totaled the first three scores and compared them with a total of the last three scores. Since each activity was worth six points, a cummulative score of 18 would have been perfect. The experimental group's mean score for activities one, two, and three was 9.05 of 18 points. The mean score of the experimental group for activities eighteen, nineteen, and twenty was 15. The experimental group improved its mean score by 5.95 points. The control group's mean score for activities one, two, and three was 9.35 of 18 points. The control group's mean score for activities eighteen, nineteen, and

twenty was 12 of 18 points. The control group improved its mean score by 2.65 points.

Insert Table 2 about here

Next I wanted to investigate the acquisition of questioning and summarization skills of students using the reciprocal teaching method. Questioning skill improvement was measured by the daily assignment involving writing two questions (one low level and one high level). Experimental group mean score on the first questioning activity was 3.3 of 6 points. The experimental group's mean score on the last questioning activity was 4.85 of 6 points. That score represents an improvement of 1.55 points. The control group's mean score on the first questioning activity was 3.25 of 6 points. The control group's mean score on the last questioning activity was 4 of 6 points. The control group improved by .75 points. Summarization skill improvement was measured by comparing the first summarization activity score to the last. The experimental group received a mean score of 2.6 of 6 points on the first summarization activity and a score of 5.05 on the last. The experimental group improved its mean score by 2.45 points. The control group's mean score on the first summarization activity was 3.25 of 6 points. The control group's mean score on the last summarization activity was 4.25 of 6 points. The control group improved by 1 point.

Insert Table 3 about here

Another comparison may be made in the absence of number scores. Below is the final summarization activity (number 18 in Appendix A) of matched students from the experimental and control groups.

Insert Figure 1 about here

The experimental group's student example is excellent. The author uses good grammar and is observant enough to realize that the ventriloquist tricked the "silly, rich man." The only flaw is that "The man" in sentence two refers to the ventriloquist. The control group's student example simply retells the story in one run-on sentence. It is unclear whether or not the author realizes that the ventriloquist tricked the rich man.

Discussion and Implications

Findings from this action research project indicate that reciprocal teaching has much to offer students. By becoming proficient in the four strategies and interacting with group members, students appear to become more strategic readers. I believe that it is of the utmost importance that the teacher monitor the groups carefully, specifically praising correct strategies. When necessary the teacher should remediate

appropriately. If the students understand reciprocal teaching's rationale, benefits, and components, I believe that they will work harder and that their comprehension will improve.

Limitations of my study may temper some of the positive results. One limitation is the fact that I did not give students enough room to answer the five questions in complete sentences on a few of the activity sheets. Another limitation of the passage and activity pages is that both appear on the same side of the page. I believe that by putting the activities on the back of the passage page, students will have enough room to write and they will not be tempted to look into the passage for the answers to the comprehension questions. Another limitation is that students were scored only on written work. Some students achieve better scores on oral reports and projects.

I would like to investigate reciprocal teaching further. Does reciprocal teaching work better with expository or narrative passages? How long do students retain their knowledge of the reciprocal teaching skills? Are all four skills essential? What size group works best? Those questions may be investigated in subsequent studies.

My study has implications for classroom teachers. In the future I plan to explicitly teach the skills of reciprocal teaching. Students need to be taught how to question, summarize, clarify, and predict. Even if my students are not in groups using the dialogue, I believe that students need more opportunity

to practice the reciprocal teaching skills. I plan to use reciprocal teaching groups when we read from the literature book and study classroom novels. Students construct meaning from the text by actively listening to one another. Also, I feel auditory learners benefitted from the daily discussions.

English teachers may find reciprocal teaching advantageous for obvious reasons. Content area teachers could also benefit by reinforcing information learned about text structure and expository material and giving students opportunities to question, summarize, clarify, and predict.

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Table 1

Grade Equivalent Scores

Student and Group	Form K	Form L	Change
1 Experimental	8.2	10.4	+1.8
1 Control	8.9	8.1	- .7
2 Experimental	3.6	4.4	+ .8
2 Control	2.9	3.6	+ .8
3 Experimental	9.5	10.5	+1
3 Control	9.2	7.3	-1.9
4 Experimental	8.2	8.5	+ .3
4 Control	7.7	7.9	+ .2
5 Experimental	9.7	10.4	+ .7
5 Control	9.2	7.7	-1.5
6 Experimental	10.6	PHS*	+1.4
6 Control	10.6	9.1	-1.5
7 Experimental	6.5	6.5	0
7 Control	6.5	7.1	+ .6
8 Experimental	7.4	8.7	+1.3
8 Control	7.7	5.4	-1.7
9 Experimental	6.5	6.2	- .3
9 Control	6.6	6.0	- .6
10 Experimental	12.1	10.2	-1.9
10 Control	12.1	9.5	-2.6

* score indicated post high school achievement

Student and Group	Form K	Form L	Change
11 Experimental	8.4	9.5	+1.1
11 Control	8.3	9.1	+ .8
12 Experimental	6.6	6.4	- .2
12 Control	6.2	4.4	-1.8
13 Experimental	8.3	9.3	+1
13 Control	8.9	9.5	+ .8
14 Experimental	6.6	7.2	+ .6
14 Control	6.6	7.3	+ .7
15 Experimental	3.4	4.6	+1.2
15 Control	4.2	6.0	+1.8
16 Experimental	7.2	8.5	+1.3
16 Control	7.2	8.3	+1.1
17 Experimental	8.3	8.4	+ .1
17 Control	8.2	7.3	+ .9
18 Experimental	7.5	10.1	+2.6
18 Control	7.4	7.6	+ .2
19 Experimental	4.2	5.6	+1.4
19 Control	4.4	2.5	-1.9
20 Experimental	8.2	8.4	+ .2
20 Control	8.5	6.2	-1.7
Average Experimental	7.55	8.29	+ .74
Average Control	7.57	7.02	- .55

Table 2

Cummulative Activity Scores

Student and Group	1,2,3	18,19,20	Change
1 Experimental	10	15	+5
1 Control	9	11	+2
2 Experimental	8	16	+8
2 Control	9	10	+1
3 Experimental	9	14	+5
3 Control	10	10	0
4 Experimental	6	14	+8
4 Control	12	15	+3
5 Experimental	9	15	+6
5 Control	13	15	+2
6 Experimental	11	15	+4
6 Control	10	13	+3
7 Experimental	7	13	+6
7 Control	9	12	+3
8 Experimental	7	13	+6
8 Control	11	12	+1
9 Experimental	8	14	+6
9 Control	9	12	+3
10 Experimental	9	16	+7
10 Control	9	10	+1
11 Experimental	10	14	+4
11 Control	8	12	+4

Student and Group	1,2,3	18,19,20	Change
12 Experimental	8	17	+9
12 Control	10	11	+1
13 Experimental	10	16	+6
13 Control	9	14	+5
14 Experimental	10	16	+6
14 Control	8	11	+3
15 Experimental	10	16	+6
15 Control	9	13	+4
16 Experimental	9	14	+5
16 Control	7	12	+5
17 Experimental	11	18	+7
17 Control	10	10	0
18 Experimental	13	17	+4
18 Control	9	15	+6
19 Experimental	6	13	+7
19 Control	8	8	0
20 Experimental	10	14	+4
20 Control	8	14	+6
Average Experimental	9.05	15	+5.95
Average Control	9.35	12	+2.65

Table 3

Student and Group	Questioning		Summarizing	
	First	Last	First	Last
1 Experimental	5	4	2	6
1 Control	3	3	2	4
2 Experimental	3	6	2	5
2 Control	2	3	4	3
3 Experimental	5	5	1	3
3 Control	4	3	3	3
4 Experimental	2	4	2	4
4 Control	3	3	5	6
5 Experimental	4	5	2	6
5 Control	3	5	5	6
6 Experimental	4	5	4	5
6 Control	2	3	4	6
7 Experimental	3	3	2	6
7 Control	2	3	4	5
8 Experimental	1	3	2	4
8 Control	4	4	4	4
9 Experimental	3	4	2	5
9 Control	2	4	3	5
10 Experimental	4	5	2	6
10 Control	3	3	3	3
11 Experimental	3	5	4	5
11 Control	3	4	2	4

Student and Group	Questioning		Summarizing	
	First	Last	First	Last
12 Experimental	3	5	2	6
12 Control	3	4	4	3
13 Experimental	3	5	2	6
13 Control	3	4	3	6
14 Experimental	4	5	3	5
14 Control	2	3	3	?
15 Experimental	4	6	3	6
15 Control	3	5	3	4
16 Experimental	2	5	4	4
16 Control	2	3	2	3
17 Experimental	4	6	4	6
17 Control	4	3	3	3
18 Experimental	4	6	5	6
18 Control	3	5	3	6
19 Experimental	2	5	2	4
19 Control	2	2	3	2
20 Experimental	3	5	2	3
20 Control	3	4	2	6
Average Experimental	3.2	5.3	3.1	5.1
Average Control	3.7	4.6	2.8	4

Figure Caption

Figure 1. Experimental and control group examples of summarization.

Write a summary about the passage above. A ventriloquist and his dog went into a restaurant. The man was pretending that the dog talked. A silly, rich man was ready to give the man $2,000.00 and he sold the dog.

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Write a summary about the passage above. There is a ventriloquist in a restaurant and his dog talks and a rich man tries to buy the dog

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Appendix A

Twenty Daily Passages and Activity Sheets

QSCP 1

Midas

There was a king named Midas, and what he loved best in the world was gold. He had plenty of his own, but he could not bear the thought of anyone else having any. Each morning he awoke very early to watch the sunrise and said, "Of all the gods, if gods there be, I like you least, Apollo. How dare you ride so unthriftily in your sun-chariot scattering golden sheaves of light on rich and poor alike--on king and peasant, on merchant, shepherd, and warrior? This is an evil thing, oh wastrel god, for only kings should have gold; only the rich know what to do with it."

After a while these words of complaint, uttered each dawn, came to Apollo, and he was angry. He appeared to Midas in a dream and said, "Other gods would punish you, Midas, but I am famous for my even temper. Instead of doing you violence, I will show you how gracious I can be by granting you a wish. What is it to be?"

Midas cried, "Let everything I touch turn to gold!"

He shouted this out of his sleep in a strangling greedy voice, and the guards in the doorway nodded to each other and said, "The king calls out. He must be dreaming of gold again."

Wearied by the dream, Midas slept past sunrise; when he awoke it was full morning. He went out into his garden. Then sun was high, the sky was blue. A soft breeze played among the trees. It was a glorious morning. Tatters of the dream were in his head.

1. T F Midas was a rich king.
2. Why didn't Midas like Apollo?
3. What did Midas wish for?
4. Why did Apollo grant Midas a wish?
5. Predict--What will happen next?

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QSCP 2

Jack's Hunting Trip

Jack started out real early in the mornin' on a huntin' trip. Took his daddy's old flintlock rifle down from over the fireboard, got the powder horn and some bullets, and pulled out up the river.

He travelled on through the woods a right smart ways, didn't see nothin' much for a considerable long while, till first thing he knowed he look up ahead of him, saw a deer standin' under a big oak tree–biggest deer he'd ever seen. And right over that deer was a whole flock of wild turkeys settin' on a limb. They were a-settin' right up close together in a row, and the limb was pointin' right Jack's way.

Jack didn't know what to do. He wanted that deer, but he wanted them turkey's too. So he got out his knife and cut the ramrod in two, put one bullet on top of the powder, then he put that half-a-ramrod in the gun and put another bullet at the top end of it. He drawed down on the deer and when he pulled the trigger he jerked up on the gun so's the bullet would go down on that row of turkey's. 'Lowed maybe he'd get five or six of 'em at one shot.

Well, he got his deer all right, but that other bullet struck the limb them turkeys were settin' on, split it open, and when the split clamped back together, it clamped down on the middle toe of ever' one of them turkeys and just helt 'em there.

Write two questions about the passage above_____

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250

QSCP 3

Eastern and Western Hemisphere

Meridians Mapmakers draw imaginary lines of longitude from the North Pole to the South Pole. They are called meridians. Each meridian crosses the great circle formed by the Equator. It is customary to have a meridian for each degree in the circle of the Equator. That means there are 360 lines of longitude, or meridians. For an obvious reason, mapmakers usually do not show every meridian on a small-scale map.

Meridians are numbered from a line called the Prime Meridian, which runs through Greenwich, England. The Prime Meridian is 0 degrees longitude. The meridians are counted both east and west from the Prime Meridian. Halfway around is the 180 degreee meridian. This and the Prime Meridian form a full circle, which divides the world into the Eastern Hemisphere and Western Hemisphere. Study a globe to see how these meridians meet at the North Pole and South Pole to form a full circle.

The Eastern Hemisphere includes the lands of four continents that stretch east from the Prime Meridian to the 180 degree meridian. They are Europe, Africa, Asia, and Australia. When we talk about the Eastern Hemisphere, we usually mean also to include the parts of Europe and Africa that lie west of the Prime Meridian. This book tells the history and geography of the lands and peoples of the Eastern Hemisphere.

The grid of parallels and meridians makes it easy to give the location of a place on Earth. You need ony two facts: latitiude and longitude.

Write a summary of the passage you just read_____

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240

QSCP 4

The Beginning of Governments and Laws

Keeping order In a city someone must be in charge. Some person, or group of persons, must manage the affairs of the city. They must direct the work of others, since all depend on each other. Someone must settle disputes so the city is not upset by the fighting . Someone must keep people from robbing or harming others. In ancient Mesopotamia both priests and kings were in charge of the cities.

Priests and temples Priests had very important positions, for they were in charge of the city's temple. The people of Mesopotamia believed in many gods. They believed certain gods controlled the weather, crops, health, love, and almost everything else. Each city--even each village--had its own god and a house for the god. In a village the god's house would be only a small room. In a city the god's house was a temple, usually built on top of a solid brick platform.

Priests were in charge of the temple property. Part of the land around a city belonged to its god. The priests managed the land and saw to it that grain and livestock were brought to the temple storehouses. The priests also collected grain, wool, and cattle from the city dwellers as offerings to the god. These offerings and the products of the temple lands supported the priests and others who served the god. They believed that if the god was pleased, then the city would be safe, but if the god was not pleased, there would be troubles.

1. _____ and _____ were in charge of cities in ancient Mesopotamia.
2. Why were priests regarded as important?
3. State one specific difference in your life if there were no laws.
4. Predict--Do people who live where Mesopotamia was located still believe in gods of weather, crops, health, food, love, etc.?

QSCP 5

The Long Way Around

I hadn't spoken to my stepmother in three days. I was absorbed by an inner grief and anger because she had given away my mother's dresses to the Salvation Army.

I could still feel my mother around the house. Sometimes I'd come bursting in from school with some important piece of news that I wanted to share immediately, and coming through the door I'd shout, "Mother, I'm Home. Where are you?" and instantly, before the echo had died I'd remember too late.

My stepmother had answered once, the first time, coming out from her bedroom with a smile on her face, thinking I was calling to her, saying "Yes, Patty, what is it"? But my face was set in a frozen scowl, and I was standing there rigid, unyielding and furious at myself for such a mistake. She understood and turning away without pressing me any further, she went back into her room and closed her door.

My mother had died two years before when I was twelve, and even though I knew better, sometimes in the middle of the night, I'd awake in a terrible fear and to comfort myself back to sleep I'd whisper into the pillow, "She's only gone away on a trip. And she'll be back." In the morning I had to face my own lie.

My father had married again last year and though my two little brothers, Jason and Scott, called this woman "Mother," my father had told me I didn't have to do so. I called her Alice even though sometimes it felt strange to call a grown woman by her first name.

Write two questions about the passage above._____

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QSCP 6

Old Ben

One morning when I was walking across a field to a sweet-appie tree, I almost stepped on him. There he lay coiled like heavy strands of black rope. He was a big bull blacksnake. We looked at each other a minute, and then I stuck the toe of my shoe up to his mouth. He drew his head back in a friendly way. He didn't want trouble. Had he shown the least fight, I would have soon finished him. My father always told me there was only one good snake--a dead one.

When the big fellow didn't show any fight, I reached down and picked him up by theneck. When I lifted him he was as long as I was tall. That was six feet. I started calling him Old Ben as I held him by the neck and rubbed his back. He enjoyed having his back rubbed and head stroked. Then I lifted him into my arms. He was the first snake I'd ever been friendly with. I was afraid to let Old Ben wrap himself around me. I thought he might wrap himself around my neck and choke me.

The more I petted him, the more friendly he became. He was so friendly I decided to trust him. I wrapped him around my neck a couple of times and let him loose. He crawled down one arm and went back again

Write a summary about the passage above.

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QSCP 7

Reptiles

The third group of coldblooded vertebrates has skin covered with scales or hard plates. This group is the reptiles and includes snakes, lizards, turtles, alligators, and crocodiles.

Snakes have long slender bodies and no legs. Lizards are like snakes in many ways but have two pairs of legs. Both have flexible bodies covered by scales. Some snakes have fangs that can inject poison into a bite. However, snakes tend to avoid people. They bite only when disturbed. Snakes eat small animals, such as mice, rats, and insects. A snake is able to unhinge its jaws and swallow an animal larger than its own head.

Turtles have hard shells above and below their bodies. They can withdraw their head and legs into the shell for protection. Some live in water, while others live on land. The land turtles, or tortoises, can live over 150 years.

Alligators and crocodiles are very similar. The crocodile has a longer, thinner snout. Both live in warm water and have nostrils on the upper part of their snout. They are able to float in water with just their eyes and nostrils above water.

Reptiles breathe air throught their lungs their entire lives. All except snakes have legs. Most reptiles live on land. Their dry skin and scales or plates protect their bodies from drying out. Like other coldblooded vertebrates, their body tempenature changes with the surroundings. To keep warm they might sun themselveson a rock. To keep cool, they might crawl under a rock.

1. _____ is an example of a reptile.
2. Why might a snake bite a person?
3. What use do turtles shells have?
4. What does "coldblooded" mean?
5. Why are an alligator's nostrils on <u>top</u> of his snout?

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QSCP 8

Australia

The world's smallest continent On a map of the world, Australia looks like the largest island off the coast of of Asia. But Australia is not considered part of Asia. It is a separate continent--the world's smallest. But since it is all one nation, Australia is one of the world's largest countries. The distance from east to west across Australia is about the same as the distance between the Atlantic and Pacific coasts of the United States.

The world's largest coral reef, the Great Barrier Reef, lies off the northeastern coast of Australia. Corals are small ocean animals with hard skeletons. Corals live in shallow ocean water, where they form large colonies. Live corals grow on the remains of dead corals building up, over the years, into reefs or ridges near the surface of the water. The Great Barrier Reef stretches for almost 1,300 miles. A belt of shallow water separates the Great Barrier Reef from the Australian shoreline.

The northern part of Australia is close to the Equator. The southeastern part of the continent is as far from the Mediterranean as thecountries of Europe are. Northern Australian has a hot climate with rainy summers and dry winters. The southeast has a climate much like that of the Mediterranean lands.

Australia's largest cities are along its coasts. Most Australians live in the southeast. Most of Australia's interior is either dry grassland or desert.

Australia has no great rivers. No large stream flows through the heart of the continent. The Murray River in the southeast is Australia's largest river.

Write two questions about the passage above_____

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252

QSCP 9

Animals' Tails

What do animals use their tails for? For just about every purpose imaginable. A squirrel's bushy tail, for instance, is a steering rudder when a squirrel is making its big arboreal jumps and a balancing parasol when the squirrel is picking its way along twigs. When a squirrel loses its footing and falls, the plumy tail acts as a parachute so effectively that squirrels can plunge 50 or 60 feet to earth without suffering an injury. A bushy tail is a warm wrap-around in cold weather--a winter fox, for instance, sleeps with its tail curled around over the tip of his nose--and a tail is also of incalculable help in making a predatory enemy misjudge a pounce. A predator, rushing after its victim, is likely to jump at the waving tail. It gets a mouthful of tail fur and the tail-owner gets away.

If a mouse finds an unstoppered jar of molasses, it will sit itself atop the neck, lower its tail into the jug in a mouse version of the gesture of a man lowering a bucket into a well, and haul up the sweet stuff tailful by tailful.

Many lizards use their tails in that way too. The original monster lizards swung their tails as weapons, in a carry-over from the tail swinging technique of fish. And today? Is it true a crocodile usues its tail as a weapon? Yes. It can knock a man over with one wallop. Do any warmblooded animals do the same sort of thing? Yes again. Take an ant bear. It thwacks with its tail as powerfully as a bear with its forepaw.

Write a summary of the passage above._____

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255

QSCP 10

Grandmother and the Workmen

Grandmother had been watching the men digging out on the street for five days. At first there had been an army of engineers surveying with their transits and levels. The neighborhood had been excited by the rumor that we would finally get a sewer pipe. The men had marked the street with red and yellow chalk marks, put pegs down, and then had disappeared.

Then one day three trucks arrived, unloaded men and equipment, and digging began. Grandmother kept close check on their progress. They dug about a cubic foot and a half per man in one week. According to my grandmother, she dug more than that in an hour in her vegetable garden.

Every night as she prepared our frijoles and mustard greens, she cursed the injustice that we should be starving while those men out in the street were getting an enormous wage of three dollars a day, enought o feed our family for a month.

One morning she couldn't stand it any longer and went out and accosted the fat foreman.

"I want a job!"

"Doing what, lady?"

"Digging like these men."

Are you kidding, lady? That's man's work."

"Look, mister, I can lean on a shovel just as good as they can. I've been watching them all week. A dog can dig faster."

"Look you got any complaints, go to City Hall."

"I just want a job. I've got two hungry kids to feed."

"Go and do some sewing or washing."

1. What is all the excitement on Grandmother's street about?
2. List two of the engineers' tools. _____ _____
3. How did Grandmother feel about the workmen's progress?
4. Predict–What will Grandmother do? 245

QSCP 11

Malta and Cyprus

Two island nations The island nation of Malta is South of Sicily in the Mediterranean Sea. Malta is very small, but its location has made it important to other countries. People from Greece set up a colony there more than 2,000 years ago. Rome once ruled Malta and so has the United Kingdom.

Malta became an independent nation in 1964. The island is very rocky. Little food is grown there. Most of the food for Malta's people must come from other countries. Two important businesses on Malta are shipping and building ships. The people of Malta speak two languages--Maltese and English. Maltese is made up of Italian and Arabic.

The island nation of Cyprus is located at the eastern end of the Mediterranean Sea. Geographically, Cyprus can be considered part of Asia, not Europe. But for the most part, the history of Cyprus is more closely connected with Europe. The island was settled centuries ago by the Greeks. It was later conquered by the Turks.

Today, Cyprus is an independent country with close ties to Western Europe. Over 75 percent of the people in Cyprus are Greek. Most of the remaining population are Turks. Greek and Turkish are both official languages in Cyprus. There has been trouble on the island between Greek Cypriots and Turkish Cypriots.

About half of the people of Cyprus make their living by farming. The other major industry is mining. Cyprus has rich deposits of asbestos and copper. Cyprus also produces olive oil and wine.

Write two questions about the passage above.____ _____

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255

QSCP 12

Conservation of Resources and Recycling

The effort to save natural resources for future use is part of the conservation movement. Conservation efforts help to save wildlife and their natural habitats as well as materials such as water and minerals used by all living things.

Conserving soil, a non-renewable resource It takes hundreds of years to form topsoil, the part of the soil that is used by growing plants. Topsoil is the result of a long process of breaking down rocks into minerals and decomposition of plant and animal remains.

The most important step in conserving soil is to keep it in place. Soil erosion is the process by which topsoil is carried by wind and rain away from an area. Preventing soil erosion is a first and important step in conserving topsoil.

Farmers can prevent topsoil erosion from washing away downhill when it rains by plowing land to follow along the slopes of the hills. This is called contour plowing. Another farming method that helps conserve soil is to plant a row of trees as a windbreak. This prevents loss of soil in dust storms caused by high winds.

Crop rotation is used to restore to the soil nutrients that are lost when the same crop is grown over and over in the same soil. An important crop to plant is legumes since they help restore the nitrates to the soil.

Conserving forests by replanting trees after lumbering helps keep a supply of wood available. Wood is needed for paper products and building furniture and houses.

Write a summary of the passage above_____

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QSCP 13

Just One of Those Days

Harry came into the motel room as I was putting my shoulder holster on, "Forget it, Ralph," he said.

I looked at him. "Forget it? What do you mean forget it?"

He took off his coat and tossed it on the bed. "The bank's closed," he said.

"It can't be closed," I said. "This is Tuesday."

"Wrong," he said. He flipped his automatic out of his holster and tossed it on the bed. "It can be closed," he said. "everything can be closed. This is Griffin's Day."

"This is what's day?"

"Griffin's," he said. He shrugged out of his shoulder holster and tossed it on the bed. "Kenny Griffin's Day," he said.

"I give up," I said. "What's a Kenny Griffin?"

"Astronaut," he said. He opened his shirt collar and tossed himself onto the bed. "Comes from this burg," he said. "It's his homecoming day. They're having a big parade for him."

"By the bank?" I asked.

"What difference?" He moved his automatic out from under his hip, adjusted his pillow, and shut his eyes. "The bank's closed anyway," he said.

I cocked my head, and from far away I heard band music. "Well if that isn't nice," I said.

"He was in orbit," Harry said.

"He should have stayed in orbit," I said.

"So we'll do it tomorrow," said Harry.

"I know," I said. "But it's just irritating."

It was more irritating to me than to Harry, because, after all, I was the planner.

1. What does a shoulder holster hold?
2. Who is Kenny Griffin?
3. What does "burg" mean?
4. What did Ralph find irritating?
5. Predict–What will Ralph and Harry do tomorrow?

245

QSCP 14

My Friend Flicka

Report cards for second semester were sent out soon after school closed in mid-June. Kennie's was a shock to the whole family.

"If I could have a colt of my own," said Kennie, "I might do better."

Rob McLaughlin glared at his son. "Just as a matter of curiosity," he said, "how do you go about getting a zero on an examination? Forty in arithmetic; seventeen in history! But a zero? Just one man to another, what goes on in your head?"

"Yes, tell us how you do it, Ken," chirped Howard.

"Eat your breakfast, Howard," snapped his mother.

Kennie's blond head bent over his plate until his face was almost hidden. His cheeks burned. McLaughlin finished his coffee and pushed his chair back. "You'll do an hour a day on your lessons all through the summer."

Nell McLaughlin saw Kennie wince as if something had actually hurt him. Lessons and study in the summertime, when the long winter was just over and there weren't hours enough in the day for all the things he wanted to do! Kennie took things hard. His eyes turned to the wide-open window with a look of almost despair.

Ken had to look at his plate and blink back tears before he could turn to his father and say carelessly, "Can I help you in the corral with the horses this morning, Dad?"

"You'll do your study every morning before you do anything else."

Write two questions about the passage above_____

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QSCP 15

Inside the Cell

Scientists in the 1800's noticed a small object inside most of the cells they observed. This object was named the nucleus. At the time, the nucleus was considered not important. We know now that the nucleus controls many important functions in the cell including cell division and growth.

Taken together, all of the living matter of a cell may be called protoplasm. It includes the cell membrane, which surrounds the cell., the nucleus, and the material between the cell membrane and the nucleus. This material in between is called cytoplasm.

The use of special dyes and the electron microscope make it possible to see many different cell structures. A structure is any part of something that contributes to its organization. The structure of a building depends upon its bricks. The structure of living things depend upon their cells. All of the things that cells do are called their functions. Each structure in a cell and each kind of cell have specific functions. For instance, different cells in the hydra have different functions. Some cells sense touch or changes in the water in which the hydra lives. Other cells aid in movement.

Many cell parts are found in nearly all cells. But there are some differences in cells of different kinds of organisms. All cells have a cell membrane. The cell membrane is a thin layer that surrounds the rest of the protoplasm. It helps protect the cell and controls the movement of substances between the inside and outside of the cell.

Write a summary of the passage above._____

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253

Egypt's Gifts from the Nile

Ancient pyramids The people of ancient Egypt, like those of Mesopotamia, built their houses of mud bricks. But they also knew how to build from stone, which was plentiful in the desert near the Nile River. The Egyptians built stone temples for their gods and stone tombs where they buried their rulers.

The largest of the tombs were the pyramids. There are a number of pyramids in Egypt, but the largest was that built for a ruler named Khufu. This tomb, called the Great Pyramid, is the largest stone building in the world. It rises about 450 feet above the desert west of the Nile. It contains 2,300,000 stone blocks, some weighing as much as 5,000 pounds. The Great Pyramid is almost as solid stone except for passageways leading to different rooms. Khufu's body is not in the burial room. The tomb was robbed long ago.

Many tourists and travelers to Egypt have seen the ancient stone buildings. They visit the pyramids and other tombs, some of them cut deep into stone cliffs near the Nile. They view the remains of temples such as Karnak with its giant columns.

Among the visitors over the centuries was a man from Sicily named Diodorous. The size of Khufu's tomb deeply impressed him. He wrote about what he saw. It was a sight that filled him "with wonder and astonishment." He marveled that its builders cut so much hard stone, "which is difficult to work but lasts for ever."

1. What were the largest tombs called?
2. Whose tomb was the largest?
3. Why would someone rob a tomb?
4. How long, do you suppose, will the pyramids last?
5. Make a guess--How were the pyramids built? How could people move 5000 pound blocks thousands of years ago?

245

QSCP 17

Bat Quest

I first heard about vampires through Dr. Alfredo Tellez Giron. Dr. Giron had isolated "derriengue fever" in vampires and shown that they were causing death in thousands of cattle. The vampires were also known to carry rabies. Most interesting to us was that possibly vampires had migrated north and crossed the Texas border. Together with Charles Mohr, we decided to explore the caves in northern Mexico and find how close the vampire colonies were to the border.

Charles Mohr's interest in the bats was purely scientific, but Jule and I determined to keep a few pets and see if we could tame them. No one seemed to know much about weird creatures. We couldn't understand why a sleeper attacked by a vampire never seemed to wake up, how the bats went about delivering their nocturnal raids, or how an animal as small as a bat could apparently show considerable intelligence in plotting his forays. Perhaps by keeping pet vampires we could answer some of these questions.

Vampires are comparatively small bats. Their bodies are only about three inches long and they have a wingspread of little more than a foot. A single vampire can only drink about a tablespoon of blood, but a horde of them can cause a sleeper to lose enough blood to weaken him. They are found only in this hemisphere. European scientists thought the conquistadores were simply repeating the native legend until Charles Darwin proved the existence of the vampires by sleeping out in the jungle and letting himself be bitten.

Write two questions about the passage above._____

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255

QSCP 18

The Ventriloquist and his Talking Dog

Into a restaurant once upon a time strolled a ventriloquist with his handsome and very clever dog. The gentleman sat down at a table, called a waiter over, and said: "Bring me a beefsteak."

As he started off to fill the order, the waiter suddenly stopped, surprised. He had distinctly heard the dog say: "Bring me a beefsteak too."

Now opposite the dog's owner at the same table sat a man who was very rich, but not all that bright. The rich man promptly dropped the knife he was holding and began gaping at the marvelous dog. In time the waiter returned to set one beefsteak on the table in front of the dog's owner, then put another down on the floor beside the dog. Then man and dog, ignoring stares and comments, fell into eating with hearty appetites. Afterward the dog owner said: "Waiter, bring me a glass of wine."

"Bring me a glass of water," the dog threw in. With that, everybody in the room stopped eating in order to watch this extraordinary scene.

"Hey, you wouldn't want to sell your dog?" the rich man asked the gentleman after a moment. "I've never seen so intelligent an animal.

But the owner replied, "Ah, I'm afraid this fellow isn't for sale,"

The rich man pulled out his wallet, and spread two thousand pesetas on the table and without a word gave the owner a questioning glance. The ventriloquist hesitated. "Hmm," he mused aloud. "Now that does change things. I see money can talk too. The dog is all yours."

Write a summary about the passage above._____

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QSCP 19

Ways of Learning About Nature

The most direct way of gaining knowledge about something in nature is to observe it. Observation is one of the most basic scientific skills. It can involve watching, listening, smelling, touching, and even tasting.

People in many societies have been skillful observers of nature for thousands of years. A hunter in the Kalahari Desert of Africa, for example, uses his trained eyes to track game. He can see things most people would miss, such as overturned pebbles or tiny bits of fur left on a branch. In our society today, we call the information gained through observation data. Even though he would not think of it that way, the hunter in the Kalari is collecting data when he tracks game.

To find the animals he has been tracking, the hunter uses the data in a certain way. He uses them as clues to make guesses about how long ago the animal passed by and in what direction it was going.

These guesses are called inferences. An inference is an interpretation of an observation. Scientists in our society must also learn how to make good inferences.

Another important way to learn about nature is to put observations into categories. This process is called classification. The hunter in the Kalahari has one category for small, burrowing animals, and another one for large herd animals.

Classification helps people make sense of the large number of things they see in the world. Scientists today use classification to look for patterns in the objects they are studying.

1. Define observation.
2. Define data.
3. Define inference.
4. Why is it useful to classify information?
5. Predict--What would happen if we didn't classify information? 253

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A Population Cycle

The lemming is a small animal of Northern America that lives in holes and feeds on plants. It is possible for one pair of lemmings to have over 700 descendants in just four months. When the number of lemmings becomes too great, they destroy their own feeding grounds. They eat both roots and stems. This kills the plants.

The lemming population reaches a peak about every four years. Then large numbers starve to death. Many die from diseases that spread rapidly in a crowded population. Others move on to new places. So the lemming population drops off as rapidly as it increased. The population then returns to its original size. It has gone through a cycle of growth and dropping off. It is ready to start the cycle over again.

Now that the lemming population is small, plants grow again in great numbers. Again there is plenty of food, and the lemming population gets larger. The population cycle starts over.

The ups and downs of lemmings affects other populations in the community, especially predators. Snowy owls feed on lemmings. When the number of lemmings suddenly drops, snowy owls are found around farms further south. They are looking for other kinds of food. Most are shot by farmers who fear the owls will eat their young animals.

Caribou and lemmings both feed on grass. When there are too many lemmings eating grass caribou must move south in search of food. This affects the Eskimos, who depend on the caribou for food and clothing.

Write two questions about the passage above._____

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255

Appendix B

Holistic Scoring

Inadequate Responses

Rating of 0 = No attempt made to complete assignment

Rating of 1 = Author is unable to begin coherently

Rating of 2 = Author begins effectively, but is unable to complete

Satisfactory Responses

Rating of 3 = Answer has a serious flaw--omits significant part

Rating of 4 = Answer has minor flaw--muddled explanation, incomplete argument

Demonstrated Competence

Rating of 5 = Answer contains a few of qualities below

Rating of 6 = Answer is logical, organized, complete sentences, contains appropriate elements (Bloom words, key ideas for summary)

Appendix C

Example given to experimental group.

FIGURE 1
Sample Reciprocal Teaching Dialogue

Text from which students are working:

Crows have another gift. They are great mimics. They can learn to talk and imitate animal sounds. Some have been known to learn 100 words, and even whole phrases. They can imitate the squeak of a chicken, the whine of a dog, or the meow of a cat.

Games have a certain fascination to crows. In a game of hide-and-seek, a crow hides in the hollow of a tree and then sounds a distress caw. The others rush to the spot, look around, then flap away. This may be done over and over, after which the young crow pops out of its hiding place and caws gleefully. Far from being annoyed at this, the flock bursts into loud cawing themselves. They seem to like the trick that has been played on them.

T: Chantel, you're our teacher, right? Why don't you summarize first? Remember, just tell me the most important parts.

S1 Crows have a hundred words they can learn by imitation. They can imitate chickens, the whine of a dog, and cats.

T Okay. We can shorten that summary a bit.

S2 You could say they can imitate other animals.

T Oh! Good one! There's a list there, Chantel, did you notice that? It says they can imitate the squawk of a chicken, the whine of a dog or the meow of a cat; and you could call that "animal sounds." Can you ask us a question?

S1 Ain't no questions here.

S3 The words (sic.) that need to be clarified are (sic.) "mimics."

S4 That means imitate, right?

T Right. How did you figure that out, Shirley?

S4 The paragraph.

T Show us how somebody could figure out what "mimic" means.

S5 They are great mimics. They can learn to talk and imitate animal sounds.

T Yes, so the next sentence tells you what it means. Very good. Anything else need to be clarified?

All No.

T What about that question we need to ask? (pause) What is the second paragraph about, Chantel?

S1 The games they play.

S3 They do things like people do.

S4 What kinds of games do crows play?

S3 Hide and seek. Over and over again.

T You know what, Larry? That was a real good comparison. One excellent question could be, "How are crows like people?"

S4 They play hide and seek.

T Good. Any other questions there?

S2 How come the crows don't get annoyed?

S5 What does annoyed mean?

T Irritated, bothered.

S5 Because they like it, they have fun. If I had a crow, I'd tell him he was it and see what he'd do.

T Let's summarize now and have some predictions.

S1 This was about how they play around in games.

T Good for you. That's it. Predictions anyone?

S2 Maybe more tricks they play.

S4 Other games.

T Maybe. So far, they have told us several ways that crows are very smart: they can communicate with one another, they can imitate many sounds, and they play games. Maybe we will read about another way in which they are smart. Who will be the next teacher?